AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for ultra-fast conversion of time signal into two-dimensional space signal, the method comprising: ~~wherein~~

introducing a signal light pulse and a reference ultra-short light pulse having an appropriate width in space ~~are introduced~~ into a nonlinear crystal through a dispersion device and ~~an~~ a one-dimensional Fourier transformation optical system; [[,]]

subjecting a second-harmonic, which is generated by satisfying a phase matching condition in the nonlinear crystal, ~~is subjected~~ to time-to-space conversion through an inverse one-dimensional Fourier transformation optical system so as to be converted into ~~an~~ a one-dimensional space distribution; and [[,]]

subjecting the time-to-space converted one-dimensional space distribution ~~is subjected~~ to filtering with a time-frequency filter provided on a filter plane of ~~an~~ a one-dimensional space frequency filtering optical system, ~~and~~

wherein a time-frequency expanded two-dimensional light distribution representing a relation between time and frequency of the signal light pulse ~~light~~ is regarded as a two-dimensional space signal.

2. (Currently Amended) A method for ultra-fast conversion of time signal into two-dimensional space signal, the method comprising: ~~wherein~~

introducing a signal light pulse and a reference ultra-short light pulse having an appropriate width in space ~~are introduced~~ into a dispersion device at angles symmetric with respect to an optical axis; [[,]]

passing light waves from the signal light pulse and the reference ultra-short light pulse, which are dispersed due to a time difference generated by a difference of incident positions on the dispersion device, ~~are passed~~ through ~~an~~ a one-dimensional Fourier transformation optical system so as to be converted into one-dimensional frequency light distributions having different incident angles depending on the incident positions on the dispersion device; [[,]]

introducing the one-dimensional frequency light distributions ~~is introduced~~ into a nonlinear optical crystal; [[,]]

subjecting a second-harmonic, which is generated by satisfying a phase matching condition determined depending on an angle formed by the incident one-dimensional frequency light distributions, ~~is subjected~~ to time-to-space conversion through an inverse one-dimensional Fourier transformation optical system so as to be converted to ~~an~~ a one-dimensional space distribution; [[,]]

converting the time-to-space converted one-dimensional space distribution ~~is converted~~ into ~~an~~ a one-dimensional space frequency distribution by ~~an~~ a one-dimensional Fourier transformation optical system; [[,]]

subjecting the one-dimensional space frequency distribution ~~is subjected~~ to filtering by a ~~time-space~~ time-frequency filter; and [[,]]

subjecting the light wave thus obtained ~~is subjected~~ to time-frequency expansion through an inverse one-dimensional Fourier transform optical system so as to obtain an intensity distribution of a two-dimensional light distribution, ~~and~~

wherein the time-frequency expanded two-dimensional light distribution representing a relation between time and frequency of the signal light pulse ~~light~~ is regarded as a two-dimensional space signal.

3. (Currently Amended) The method for ultra-fast conversion of time signal into two-dimensional space signal according to claim 1, wherein a space frequency filter ~~filtering~~ is employed as the time-frequency filter.

4. (Previously Presented) The method for ultra-fast conversion of time signal into two-dimensional space signal according to claim 1, wherein the time-frequency filter has a different transmissivity distribution and a vertical cut out position of a space frequency component of a light wave outputted from the one-dimensional Fourier Transform light system is arbitrarily selected.

5. (Currently Amended) The method for ultra-fast conversion of time signal into two-dimensional space signal according to claim 2, wherein a space frequency filter ~~filtering~~ is employed as the time-frequency filter.

6. (Previously Presented) The method for ultra-fast conversion of time signal into two-dimensional space signal according to claim 2, wherein the time-frequency filter has a different transmissivity distribution and a vertical cut out position of a space frequency component of a

light wave outputted from the one-dimensional Fourier Transform light system is arbitrarily selected.

7. (Previously Presented) The method for ultra-fast conversion of time signal into two-dimensional space signal according to claim 3, wherein the time-frequency filter has a different transmissivity distribution and a vertical cut out position of a space frequency component of a light wave outputted from the one-dimensional Fourier Transform light system is arbitrarily selected.